

# The Health Hazards of **POWER LINES**

*Electromagnetic fields around high-voltage power lines have been linked with higher rates of miscarriage, cancer and suicide among nearby residents.*

*Despite convincing evidence, governments and utilities prefer to keep the public in the dark!*

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The electromagnetic spectrum includes, at one end, x-rays and gamma rays and, at the other end, radio waves and extremely low frequency waves, with visible light roughly in the middle. We are not usually aware of other types of electromagnetic energy, and yet it is all around us and may have a potential for damaging people's health. When power lines carry a high voltage, whether carried overhead or buried underground, they appear to have adverse effects on the people who live and work nearby.

Since the late 1970s, a 400-kilovolt electricity power line has run through the centre of the tiny village of Fishponds, in Dorset. Today, three quarters of the villagers complain of increasing ill-health. Over a period of six years, four of the eight men living in Fishponds have died of heart attacks. Residents report: "It just seems as though all your limbs go"; feelings of exhaustion so people can hardly bring themselves to do the normal things they like doing; and sleep problems.

High voltage power-lines create fields which extend for several hundred feet and which, some scientists argue, can trigger different effects on animals and humans. As understanding of these facts has increased, a number of governments and some states in the USA have established "rights of way" to prevent people living close to the lines. Many scientists think the idea that people should be living directly under high voltage transmission lines is simply barbaric. There is certainly clear and convincing evidence that the practice ought to be stopped, and there ought to be a minimal right-of-way prohibiting that kind of thing.

Against the background of growing worldwide concern about the potential health risk created by power lines, utility companies have commissioned some research of their own which has helped them convince themselves that there is no risk to people living near power lines!

There is, however, growing concern on both sides of the Atlantic that power lines are a health hazard. Publicly, both the British and American governments say there are no risks, but many scientists working in this area no longer believe this to be true.

Dr Perry in England published findings that showed that people living in a high magnetic field were 40 per cent more likely to commit suicide. This report formed part of the growing body of evidence which first started to appear in the early '70s when the US Navy's *Project Sanguine* introduced a new way of communicating with their submarine fleet, using a transmitter based at Clam Lake, Wisconsin, which worked on a frequency very similar to power lines. Unlike the power companies, however, the Navy was legally obliged to establish that there were no environmental risks in using the *Sanguine* transmitter.

The results of some 20-odd programs run by the US Navy on volunteers indicated that there were biological effects which were potentially hazardous to human health; further, that since the frequencies being evaluated bracketed the power frequencies of England at 50 Hz, and the US at 60 Hz, and since the power lines emitted a signal far stronger than these, we certainly could expect to have bio-effects in power lines; therefore the investigating commission pronounced that the American civilian population was at risk.

One hundred and twenty volunteers from the Marines were subjected to low-level electromagnetic fields. These tests produced some alarming results. As soon as the fields were turned on, all but one of the Marines showed a rapid build-up of serum triglycerides—an unmistakable warning of cardiac or heart problems to come. These problems were a source of considerable embarrassment to the Navy, and remain so today. A secret survey of workers at the Wisconsin transmitter showed a similar result.

The Public Service Commission tried to get that information from the Navy, but the Navy refused to forward it to them or even to acknowledge that such a committee had met or that any data of that nature was at hand.

The hearings into the proposed power line from Canada to New York moved from a small-time formality to a full-scale confrontation. On the one side, the power companies with their scientists and their public relations machinery; on the other, Dr Robert Becker and his co-workers with their laboratory findings and their photographs of mice irradiated by low-level electromagnetic fields—which showed that, within three generations, the offspring were severely stunted. Dr Becker said:

*We went in simply as scientists who were drawing attention to what we thought was a public hazard. The utility companies, it turned out, not only supported themselves amply with money, but it became evident very early on that the federal government had an interest in seeing to it that the hearings, if at all possible, did not take place; or if they did take place, that the result would be an exoneration of electromagnetic fields as having no health hazard whatsoever.*

The project went ahead.

The Hoskins family and their ancestors have been homesteaders in northern New York State for more than a century. They and their farm had always prospered until the late 1970s when the high-voltage power line became an unwelcome neighbour. Their farm is just outside the 325-foot right of way established by New York State. They had had chickens there for 50 years, but, when the power line was first energised, the hens started laying what looked like scrambled eggs: the white and the yolk were mixed. They now believe that the electric field had advanced the chickens' systems in such a manner that the chicken had started to grow inside the egg before the hen had laid it. The birds were housed through the winter, and went back to laying normal eggs; but in the spring, when let out again in the yards, they started laying scrambled eggs again. The production dropped and the mortality rate increased.

Laboratory evidence that animal foetuses are easily damaged by electric fields comes from a senior Czech scientist, Dr Karel Marha, who now lives in Canada. Laboratory research in Spain has also shown that the growth of a normal chicken embryo can be severely damaged when exposed to low-level electromagnetic fields similar in strength to those created by the high-voltage lines near the Hoskins farm—where breeding problems were not just confined to their chickens. Pregnant animals pastured under the line had disastrous results and high calf-mortality. Estate agents who handle property in the US say they already have property under the power line that they can't sell because nobody wants to live just near power lines.

Professor Ross Adey, a biophysicist working at the Brain Research Institute in California, says that the question of the body's ability to maintain the biological rhythms is now under serious review because the pineal gland, situated almost within the brain (it's on top of the brain) secretes a hormone, melatonin, that is an essential element in the body's ability to set up its 24-hour cycles; and recent experiments have reported a very clear loss of the rhythmicity in the secretion of melatonin—of itself of no great significance, but, carried across a lifetime of most people exposed to a variety of power-line fields, one must ask the question whether it's appropriate to live so close to the field that there may be an interference with melatonin secretion.

He goes on to say that, given that the biological rhythms may be modified, this in a sense could be the start of a cascade of effects. One would wonder whether other cycles, for example, sex cycles, sleep and wakefulness and the like, may be disrupted with quite undesirable effects—which at first are no more than a modifica-

tion in the quality of life but which ultimately may affect the longevity, for example, of people who are constantly exposed.

Some scientists feel that underground cables are probably more important than the overhead cables. If Dr Perry's conclusions are correct—linking higher rates of suicide and depression with power cables—there are worrying implications both for those people living close to high voltage underground cables and for those in high-rise flats.

Another study in West Germany, for example, looked for suicides, spontaneous miscarriages or car accidents with different situations in the environment, and found a high correlation with the level of electromagnetic fields.

Britain's biggest private house-builders have not been given any indication by the power companies or local planning authorities that power lines could present a health hazard. It concerns me that people are being slow to take notice of this, but I think the message will get through in the end. I think we should learn from the Russians. House-building under power lines has not been allowed in the [former] Soviet Union for over 20 years.

Recent scientific research also suggests that magnetic fields may not only affect the behaviour of individual cells but also the rate at which they multiply. There is a perfectly reasonable and well-accepted theory of cancer formation which holds that throughout your lifetime you probably generate a number of malignant tumours that, as these begin (and you have a relatively small number of cells involved), the body recognises the presence of these cells which have become abnormal, mobilises its resistance mechanisms (immune bodies—the white cells of the blood, and so forth), and destroys the tumour. When the organism is exposed to abnormal magnetic fields—either because

of the direct effect of those fields upon the growth of these tumours so that their growth is enhanced, or because the ability of the body to recognise and destroy these tumours is diminished—one will see a greater incidence of these tumours. We know that a good part of the regulation of growth within living organisms is electrical in nature.

Now, if you are going to expose large numbers of the population to abnormal electromagnetic fields, and do so, chronically, every day—and do so not only for one generation but perhaps for two or three generations—there could well be a public health problem out there of maybe catastrophic proportions.

In the United States and Sweden, studies have produced evidence that both children and adults living near power lines may be more likely to get cancer. Other surveys or epidemiological studies in Britain and America have also shown that power workers and other people whose jobs expose them to electric and magnetic fields are up to twice as likely to contract acute myeloid leukaemia. Laboratory experiments which measured the effects of electromagnetic fields on the ability of the white blood corpuscles (or T-lymphocytes) to prevent cancer from developing, show that the white blood corpuscles' efficiency is most affected by precisely the frequency of American power lines: 60 cycles per second.

Officials are going to have to decide if the good achieved by protecting people against health risks outweighs the costs. It's the classic risk-benefit analysis that bureaucrats and officials go through routinely. In the United States the process takes place on a state-by-state basis, and in many states is largely subverted by the relationship that exists between the power companies and the agencies the states have for regulating them. But these are political questions, not scientific questions. The scientific evidence with regard to the health-risk aspect is clear and convincing—and

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only likely to become more so. The political questions about the implications have just begun to be wrestled with. They're the really hard questions; the scientific ones are simple in comparison.

The main source of public funding has been through the military establishments, and there has been a good deal of private sponsoring by some of the companies with vested interests. Some of that has been subsidised either directly or indirectly by the intelligence services or the military services. Some companies, because they have products like microwave ovens, have sponsored some research, but most of the research that is sponsored is usually on an annual renewal basis; consequently there is a very short leash on almost all of the scientists that work in this area.

It is interesting to note that the people who have spoken out about the inadequacy of radiation protection standards have all had their research funds cut off; they've lost every grant they've had; they have often been subjected to administrative harassment and some have been forced to retire early. That's a very, very strong signal to everybody else working in this field of research.

One doctor's crime was to establish a clear link between power lines and health hazards. His punishment was scientific exile so that now, at 59, he is enduring enforced early retirement despite his worldwide reputation for original research work. It probably cost him the Nobel Prize for which he had been nominated.

In October 1982, a group of military and industrial leaders held a secret meeting at Hot Springs, Virginia, to discuss what they see as the unwelcome publicity being given to the potential hazards of electromagnetic radiation. To permit a free exchange of thoughts on this sensitive subject, the meeting was held behind closed doors, all cameras and recording devices were banned, and no record of the discussions was taken. The delegates, who included the armed services and the Environment Protection Agency—the American Government's watchdog—decided to raise a public rela-

tions budget of US\$425,000 which would be used in part to counteract alarmist and irresponsible reports.

Self-policing has so far given power lines a clean bill of health, and effectively discounted fears within the scientific community that the millions of people living underneath or close to power lines will be the raw data of future medical surveys, with more unwitting volunteers being added week by week.

This is not work that has appeared from under the rug in the last year. There has been a very clear progression towards this state of awareness for more than two decades.

Despite the growing weight of evidence, authorities in Britain, and Australia continue to allow homes to be built close to power lines, even though their counterparts in a number of other countries have taken action to stop such developments. ∞

**For further information on power-line issues, contact:**

**Australia:** Powerline Action (Vic.) Inc./EMF Advice—Ian MacMillan, 3/247 Flinders Lane, Melbourne, Vic. 3000; phone +61 (03) 654 4512, fax +61 (03) 650 3689. • **Association of Citizens Against Telecommunication Towers (ACATT)**—Kate Barrett, 2/91 Henley Beach Road, Henley Beach South, SA 5022; phone (08) 356 4408.

**New Zealand:** • **Adopt Radiation Controls, Inc. (ARC)**—c/- Bruce Morrison, PO Box 21113, Henderson, Auckland. • **Environmental Protection for Children Trust (EPC)**—393 Ilam Road, Christchurch; phone +64 3 351 7329, fax +64 3 343 3693.

**Canada:** • **PACE Canada**—100 Bronson Avenue, #1001, Ottawa, Ontario K1R 6G8; phone +1 (613) 236 6265, fax +1 (613) 235 5976.

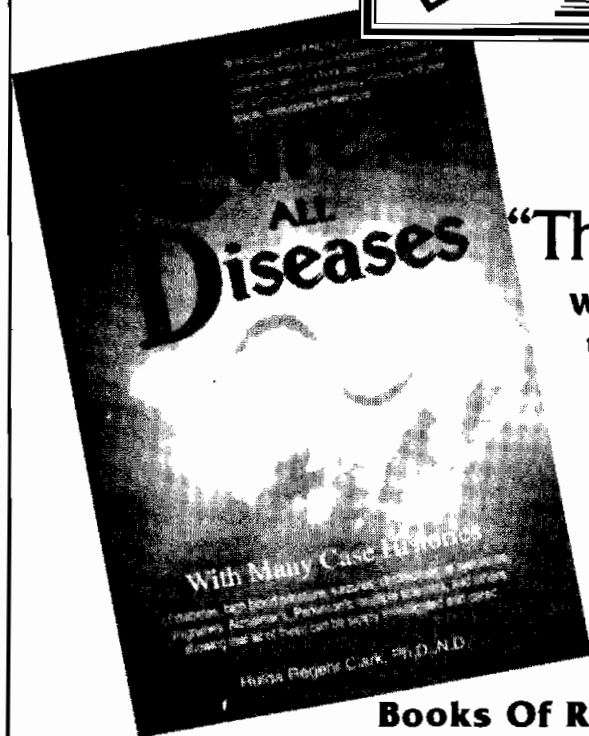
**Sweden:** • **FEB (Association for the Electrically and VDT Injured)**—Box 115126, 104 65 Stockholm; ph+46 (8) 712 9065, fax +46 (31) 83 3509.

**UK:** • **London Hazards Centre**—Interchange Studios, Dalby Street, London, NW5 3NQ. • **PowerWatch UK**—c/- 2 Tower Road, Sutton, Ely, Cambs, CB6 2QA.

**USA:** • **National EMR Alliance**—410 West 53rd St, #402, New York, NY 10019; phone +1 (212) 554 4073, fax +1 (212) 977 5541.

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